



7. combination of interest rate options: interest rate collar

MIFID complexity

IR 2

product description

If you want to avoid having to pay a high premium for a cap or a floor option, a collar option is a plausible solution. Interest rate options are like foreign exchange options in that they can be combined with one another. A cap and a floor option combined result in a collar transaction which comes at no cost. This product can be used to create a range of protection best suited to your requirements.

An interest rate collar involves the simultaneous sale/purchase of a cap and a floor. Your company buys the option that provides you with protection against adverse changes in interest rates, and sells the other option, thereby limiting the benefits of favourable interest rate movements, so that the transaction can be cost-free. The product can be particularly favourable in the case of a flat yield curve, or when you believe that despite the market expectations reflected in the yield curves, market interest rates will not change significantly in the foreseeable future.

example: a company has a EUR 300 000 3-year floating-rate bullet loan in EUR. The current 3-month EURIBOR is 0.50% and the 3-year fixed interest rate is 0.85%. The company expects that there will be no substantial change in interest rates in the future, but it would nevertheless like to be protected against a possible sudden surge in interest rates. Therefore, it enters into a 3-year zero-cost interest rate collar, or in other words it simultaneously buys a cap option with a 0.90% strike and sells a floor option with a 0.50% strike for the same notional. By doing so, the maximum of the company's interest expenditure will be set at 0.90%, in return for which the company accepts that it will not benefit from a potential decrease of interest rates below 0.50%.

Interest rate collar with an underlying loan transaction: buying of cap option and selling of floor option:

Possible scenarios on specific predetermined expiry dates:

- market interest rate > cap interest rate (cap strike)
You have a right to pay the cap interest rate instead of the market rate, which means that the bank will pay to you the time proportional difference between the market interest rate and the cap interest rate.
- market interest rate < floor interest rate (floor strike)
You have an obligation to pay interest at the floor rate, which means that you will pay to the bank the time proportional difference between the market interest rate and the floor interest rate.
- the market interest rate is between the cap and the floor rates:
no settlement takes place between the parties

Interest rate collar with an underlying deposit transaction: buying of floor option and selling of cap option:

Possible scenarios on specific predetermined expiry dates:

- market interest rate < floor interest rate (floor strike)
You have the right to receive interest at the floor rate, which means that the bank will pay to you the time proportional difference between the market rate and the floor rate.
- market interest rate > cap interest rate (cap strike)
You have an obligation to pay interest at the cap interest rate, which means that you will pay to the bank the time proportional difference between the cap interest rate and the market interest rate.
- the market interest rate is between the floor and the cap rates:
no settlement take place between the parties

In most cases settlement is based on the reference interest rate fixing 2 days before the end of the interest period, however it is possible to agree otherwise.

parameters of the interest rate collar

notional	EUR 300 000
tenor	3 years
variable notional	no
floor (minimum) strike	0.50%
cap (maximum) strike	0.90%
frequency of interest payments	quarterly
interest calculation convention	actual number of days/360
fixing day of floating interest rate	2 working days before onset of given interest period
settlement of interest payments	net settlement at the end of each interest period
precondition to settlement at the floor strike	3-month EURIBOR below 0,50% at the start of the interest payment period
precondition to settlement at the cap strike	3-month EURIBOR below 0,90% at the start of the interest payment period
current 3-year ICAP EURO offer rate against 6-month EURIBOR (Day count: ANN 30/360 vs 6M EURIBOR)	0.85%
current 3-month EURIBOR	0.50%
transaction fee	zero

possible scenarios at the end of each interest period assuming that on the fixing dates the 3-month EURIBOR is

3-month EURIBOR above 0.90%	your company pays 0.90% interest on the loan in every interest period
3-month EURIBOR between 0.50% and 0.90%	your company pays 3-month EURIBOR on the loan in every interest period
3-month EURIBOR below 0.50%	your company pays 0.50% interest on the loan in every interest period
best-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR above 0.90%. Your company receives the time proportional difference between 0.90% and 3 month EURIBOR for the actual notional amount in each interest rate period.
worst-case scenario (treasury transaction on a standalone basis)	On every fixing day 3 month EURIBOR below 0.50%. Your company pays the time proportional difference between 0.50% and 3 month EURIBOR for the actual notional amount in each interest rate period with an unlimited interest rate loss potential. .

the market value of the position one year after the contract conclusion from the customer's point of view

market value: the cost of liquidating the position calculated at a given point of time and under the prevailing market terms and conditions (in case of a positive value the company can close the transaction with profit) (assumption: there is parallel shift in the entire yield curve in the extent of the change of the 3-month EURIBOR, and the shape of the yield curve remains unchanged)

The number of possible outcomes is unlimited, and there may be even more extreme values than the ones presented below.

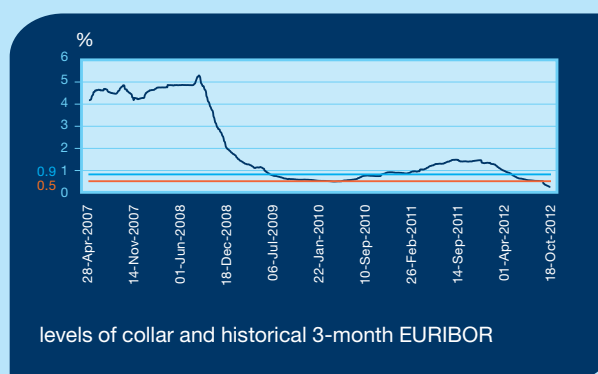
3-month EURIBOR in one year (%)	market value of the position (EUR)
-1.00	-6 765
0.50	-510
2.00	5 745

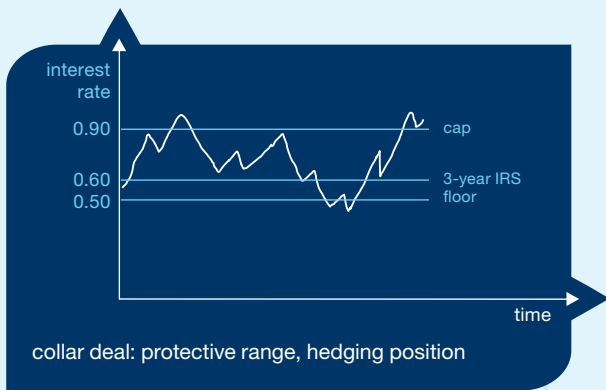
financial outcome of some possible scenarios 1 year after the trade date, supposing that the 3-month EURIBOR evolves as below in the last quarter of the given year

The number of possible financial outcomes is unlimited, and there may be even more extreme values than the ones presented below.

end of period (outstanding principal EUR 300 000)	3-month EURIBOR at the start of the interest period (%)	underlying exposure's financial outcome with no treasury transaction (3 months' interest expense without collar, EUR)	profit/loss of the product on a standalone basis (net settlement at the end period, client pays if value is "+", EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with collar, EUR)	underlying exposure's financial outcome with the treasury transaction, hedged position (3 months' interest expense with 0,60% IRS, EUR)
1 év	-1,00	-750	+1 125	375	450
1 év	0,00	0	+375	375	450
1 év	0,70	525	0	525	450
1 év	1,50	1 125	-450	675	450
1 év	2,50	1 875	-1 200	675	450

The chart shows the interest level(s) of the treasury deal and the historical evolution of 3 month EURIBOR. The historical data is intended merely to compare the interest level(s) of the deal to the historical rates. Future evolution of interest rates and interest changes for the remaining tenor are unforeseeable in advance, actual profit and loss depends on the interest rate prevailing on the fixing days. The chart is not suitable to forecast interest rates and market value of the position.





advantages of transaction

- protection against unexpected and substantial adverse changes in interest rates
- limited benefit from interest rates that are more advantageous than the fixed interest rate on the trade date
- the maximum / minimum of future interest rate payments/income is fixed in advance (the worst-case scenario is known)
- can be used to hedge both loans and deposits
- an interest rate collar can be combined with loans granted by or deposits placed with other financial institutions, since the collar deal is separate from the underlying loan or deposit transaction
- zero cost, this deal is available in most liquid currencies free of any special premium
- the expiry date, the cap and floor interest rates (strikes), and the frequency of interest payments can be set at your will, in accordance with your expectations, plans and budget; the change of one parameter will cause the rest of the parameters to change, too
- available for any repayment schedule
- if the treasury transaction is no longer needed, the collar deal can be closed at any time before expiry, by means of a counter trade

risks of transaction

- the protection relates to interest rates that are less advantageous than the fixed interest rate applicable to the same tenor
- you will not derive the full benefit of interest rate changes that are favourable for your underlying position

A collar deal could be an appropriate hedging strategy for you if you expect interest rates to remain stable at around the current market rates. If you expect that market rates will go below the floor level in the future, then the cap option may result in lower financing expenses, because the option premium you must pay could be set off by future decreases in the interest rate from which you can draw unlimited benefit. If, however, you expect higher interest rates than the market, then you will enjoy better conditions with an interest rate swap.

- the extent of the potential interest loss is unlimited in theory, if during the tenor interest rates have developed significantly more favorably than you expected.
- if the underlying loan is repaid before maturity, it is advisable to close the collar deal as well, because then there will no longer be any risk originating from the underlying business; on account of fluctuation in market rates, the closing of a collar deal before expiry will entail an obligation to settle, including the possibility of a loss
- the market value of interest rate derivatives is determined by the evolution of market interest rates, the length of interest rate periods, the number of days remaining until the expiry of the transaction, the day count method and the evolution of the notional until expiry. In the case of an interest rate option the evolution of market volatility also influences the market value. The drop in market liquidity could lead to a bid-offer spread widening, which could also affect the market value of the position negatively.
- the change in market value could lead to an obligation of temporary or permanent increase of collateral which may affect the company's liquidity and solvency negatively. In case of exceptional market circumstances (eg, money market and other crisis) the negative market value of the position from the Client's viewpoint could reach so extreme levels that providing the adequate collateral may lead to the company's insolvency. Moreover, failure to provide additional collateral in time might lead to the closure of open positions thus prompt realization of losses, which may affect the company's liquidity and solvency negatively.
- chapter I/b. entitled "Risk Factors" of "K&H Treasury Handbook of Market Risk Management" lists those risks that do not originate exclusively from the nature of the product described here, but rather, from other factors.

product structure

The product is built up of two plain vanilla interest rate option. The sections on plain vanilla interest rate options of Chapter I/c. entitled "5 Basic Products" of "K&H Treasury Handbook of Market Risk Management", also applies to this product.